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COMMUNICATIONS

Changes in Medical School Applicant Preparation And Admission Requirements in the Behavioral Sciences

Joseph Stokes, III, M.D., and Michael Martin

During the last 15 years a steady growth of knowledge in the social and behavioral sciences contributing to the practice of medicine has taken place (1–3). In this paper the authors report changes in behavioral science preparation among applicants to U.S. medical schools and the success of students majoring in behavioral sciences in being admitted. Changes in preparation in the behavioral sciences required by medical schools are also discussed.

Methods

Data provided by the Association of American Medical Colleges (AAMC) regarding the undergraduate baccalaureate majors of applicants to U.S. medical schools for 1972–73 through 1977–78 and data from the AAMC's *Medical School Admission Requirements* for 1970–71 and 1980–81 were analyzed. In the latter study, only those 106 medical schools reporting in both years were included in the analysis.

Results

Information on the baccalaureate majors of applicants in 1972–73 and 1977–78 is presented in Table 1. In 1972–73, only 3,243 (9 percent) of the 36,135 applicants had majored in one or more of the five behavioral and social sciences. More students majored in psychology than all the four other disciplines combined. Only 158 majored in anthropology, and even fewer students majored in a discipline ordinarily classified among the humanities. In comparison, 10,741 (29.7 percent) majored in biology; chemistry was the next most popular with 4,376 (12.1 percent of applicants); and the remaining students either undertook a general, premedical major or majored in physics, engineering, or another physical science. The majors of a significant number of students were not known.

Five years later the total number of applicants to medical school increased to 40,569, but the number of students majoring in a behavioral or social science fell to 2,814, which represented only 6.9 percent of all applicants. All the behavioral and social science disciplines shared in this decline except anthropology, in which the number of majors rose from 158 to 192. The number and percent of majors in the humanities also fell over this five-year period to 907 (2.2 percent). Biology assumed an even more dominant role and represented the college major of 37.1 percent of all applicants. Chemistry also maintained its status as the second most popular major. Therefore, by 1977–78, almost half of all applicants either majored in biology or chemistry, while only about one student in 17 majored in a behavioral science. Small as it is, this latter number was still almost three times greater than the number of students majoring in the humanities. Nevertheless, except for sociology, the likelihood of behavioral science majors being admitted to a U.S. medical school improved over the five-year period, according to the data analyzed, and the same held true for humanities majors. By 1977–78, students majoring in the behavioral sciences were as successful in gaining admission to medical school as were those who majored in chemistry. The 192 who majored in anthropology were the most successful of all in gaining admission. All behavioral and social science majors, except for those in sociology, were more successful in being admitted to medical school than were those who majored in biology.

According to information published in the 1970–71 edition of *Medical School Admission Requirements*, only 12 (11 percent) of the medical schools in the United States required their

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TABLE 1

Baccalaureate Majors of Applicants to U.S. Medical Schools

Major	1972–73		1977–78	
	No.	Percent	No.	Percent
Behavioral Sciences				
Anthropology	158	0.44	192	0.47
Psychology	2,313	6.40	2,096	5.17
Sociology	309	0.86	160	0.39
Social Sciences				
Economics	226	0.63	204	0.50
Political science	237	0.66	162	0.40
Humanities	1,281	3.50	907	2.20
Biology	10,741	29.70	15,060	37.10
Chemistry	4,376	12.10	4,783	11.80
Unknown	16,494	45.60	17,005	41.90
Total	36,135	100.00	40,569	100.00

applicants to have completed one or more courses in behavioral sciences. Eleven (10 percent) strongly recommended that their applicants should take one or more such courses; 40 (38 percent) made some mention of behavioral science preparation; and the remaining 43 (41 percent) made no reference to behavioral science preparation. Ten years later the publication revealed that the number of medical schools requiring one or more such courses almost doubled to 21 (20 percent), and the number strongly recommending one or more courses increased to 16 (15 percent). The number of medical schools mentioning behavioral science or making no mention decreased correspondingly. However, despite the trend toward increased requirements, there was considerable flux among the schools. For example, of the 12 medical schools requiring one or more behavioral science courses in 1970–71, by 1980–81 three had downgraded this requirement to only a strong recommendation, and one failed to mention any behavioral science preparation whatsoever. Likewise, of the 11 schools strongly recommending a behavioral science course in 1970–71, only two in 1980–81 had upgraded that recommendation to a definite requirement, six continued to recommend one or more courses, two mentioned such preparation, and one made no mention whatsoever.

Discussion

Medical school admission committees often refer to the fact that they seek applicants with a variety of premedical preparation and experience. At the same time, they have maintained such rigorous admission requirements in biology, chemistry, and the other "hard sciences" that it is difficult for premedical students to select many college courses other than those that are required. Although proficiency in a foreign language has largely been dropped as a requirement, medical schools still value preparation and proficiency in mathematics and physics more highly than they do education in the behavioral sciences or humanities. In view of this fact, it is not surprising that more and more students are majoring in biology and chemistry and that fewer are majoring either in behavioral or social sciences or in the humanities. Nevertheless, it should be of some reassurance to those students who do pursue such atypical majors that their likelihood of gaining admission to medical school appears at least as good as, if not better than, it does for those who major in the hard sciences.

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Medical School Education in Hypertension Management: A National Survey

Marvin Moser, M.D., David W. Rowden, Ph.D., David Richardson, M.D., and Harriet Dustan, M.D.

The management of patients with primary hypertension remains a significant problem for the medical profession. Current estimates place the number of persons in the United States with definite elevations of blood pressure (diastolic blood pressure [DBP] > 90 mm Hg) at more than 35 million. Hypertension is one of the three most common reasons why adult patients visit physicians and is ranked second only to coronary artery disease as the most serious common medical problem that practicing physicians in primary care see in their practices (1).

In spite of this, however, based upon discussions in 1977 and 1979 between members of the National High Blood Pressure Education Program of the National Heart, Lung, and Blood Institute and representatives of more than 20 academic medical centers in the Midwest and eight in the Northeast, it was apparent that specific programs for education in hypertensive vascular disease have been poorly organized in many centers.

Method and Results

In an effort to determine the level of training in this discipline, a self-administered questionaire was sent to the chairmen of the departments of internal medicine and to specific physicians known by the authors to be active in the field of hypertension at 114 academic medical centers. Faculty members from 90 centers in 44 states responded after several contacts. Results of this survey indicate that:

1. Only 11 of the 90 medical schools had specific hypertension sections.

2. After completion of four years of medical school, students on the average had received 18 hours of instruction in the management of hypertension. Nineteen additional hours were accumulated after three years in graduate medical education for a total of 37 hours after seven years (Table 1).

3. Undergraduate medical students spent only a short period of time (an average of 1.5 weeks) in clinics designated as hypertension clinics, and the average number of students involved per school at any one time was small—three per school.

There was little continuity of care. Even when the hours of informal teaching time, that is, ward rounds, case presentations, and general medical clinics, were included, it appeared that curriculum content was limited.

Discussion

The disparity between hospital and medical school training in hypertension and the problems that a physician faces in practice is one that should be emphasized to medical educators. The fact that only a few students or house staff members are exposed to specific treatment problems in an outpatient setting and that the time they spent with these problems is short also suggests a need for a reevaluation of training in hypertension management. Although some institutions responding to the survey noted that hypertensive patients were followed in general medical clinics and that a large number of residents were involved in their care, the authors, based on their experience, believe

The study reported here was jointly sponsored by the American College of Cardiology, the American College of Physicians, and the American Heart Association.

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TABLE 1

Distribution of Training Time in Management of Hypertension by Type of Setting and Placement in the Curricula of 90 Academic Medical Centers, 1980

Placement in Curricula	No. Responding	Average Hours by Setting				Average Hours All Settings
		Lecture	Seminar/ Workshop	Clinic	Other	
Undergraduate						
1st Year	32	1.50	0.22	0.84	0.28	2.8
2nd Year	81	1.93	0.79	0.33	0.05	3.1
3rd Year	75	1.44	0.51	2.64	0.23	4.8
4th Year	50	0.94	0.68	5.28	0.48	7.4
Graduate						
1st Year	61	1.98	0.39	2.57	0.18	5.1
2nd Year	59	1.91	0.51	4.05	0.22	6.6
3rd Year	52	1.92	0.58	4.37	0.25	7.1

that training in the management of a chronic illness in these clinics is relatively poor in many cases.

Hypertension in most cases can be controlled with appropriate medication. It is a model of a chronic disease for which medication must be continued for the life of a patient and where numerous problems relating to adherence to therapy must be addressed. Given this factor plus the high prevalence of hypertension, it seems reasonable to expect that a more systematic approach to teaching the management of hypertension in medical schools and teaching hospitals might be considered. However, within the current framework of clinical training in undergraduate and graduate medical education, there appears to be no adequate mechanism for a majority of future practitioners to learn the necessary skills for the long-term management of hypertensive patients.

Based on the responses of the 90 academic medical centers, it is apparent that formal teaching time in the management of hypertension at both the undergraduate and graduate levels is limited, only a few specific facilities are available for training in long-term hypertension management, and an increased emphasis should be placed on the management and training of hypertension management within existing general medical and hypertension clinics.

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Effect of Residents' Use of Laboratory Tests on Hospital Costs

John L. Boice, M.D., and Maurice McGregor, M.D.

It is generally recognized that university teaching hospitals are more expensive to operate than nonteaching hospitals (1). Many reasons for the difference have been postulated. One widely held belief is that interns and residents in training "overinvestigate" the medical problems which they face. Several attempts have been made to estimate the magnitude of this

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